No. 7 Attachment







structure search

IUPAC > Gold Book > search > text search

goldify Indexes

Search results

alkylene



Results 1-1 of 1 for 'alkylene'

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term for alkanedy groups commonly but not necessarily having the free valencies on...
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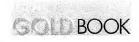
chemistry math/physics general source documents

alphabetical



Attachment No. 2







search

IUPAC > Gold Book > alphabetical index > A > alkenes

structure search goldify

PREVIOUS alkene photorearrangement

NEXT alkoxides

Indexes

alphabetical chemistry

math/physics general source documents alkenes

Acyclic branched or unbranched hydrocarbons having one carbon-carbon double bond and the general formula C_aH_{2e}. Acyclic branched or unbranched hydrocarbons having more than one double bond are alkadienes, alkatrienes, etc. See also: olefins

PAC, 1995, 67, 1307 (Glossary of class names of organic compounds and reactivity intermediates based on structure (IUPAC Recommendations 1995)) on page 1313

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Cite as:
IUPAC. Compendium of Chemical Terminology, 2nd ed. (the "Gold Book"), Compiled by A. D. McNeught and A. Wilkinson.
Buckeell Scientific Publications, Oxford (1997), XML co-time corrected version: http://gio/bbook.kajac.org (2006-) created by
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Version for print | History of this term





Nomanciature

Naming Organic Compounds

The increasingly large number of organic compounds identified with each passing day, together with the fact that many of these compounds are isomers of other compounds, requires that a systematic nomeroisture system be developed, use as each distinct compound has a unique molecular shoulder which can be designated by a structure (formula, each compound must be given a characteristic and unique name. As organic chemistry grew and developed, many compounds were given trivial names, which are now commonly used and recognized. Some examples are:

	Name	Methane	Butane	Acetone	Toluene	Acetylene	Ethyl Alcohol
1	Formula	CH ₄	C4H10	сн₃сосн₃	CH ₃ C ₆ H ₅	C ₂ H ₂	C ₂ H ₅ OH

Such common names often have their origin in the history of the science and the natural sources of specific compounds, but the relationship of these names to each other is arbitrary, and no rational or systematic principles underly their assignments.

The IUPAC Systematic Approach to Nomenclature

A railonal nomendature system should do at least two things. First, it should indicate how the carbon arms of a given compound are bonded together in a charteristical time of which and rings. Second, it should indiring and locate any inclinational groups present in the compound. Since hydrogen is such a common component of organic compounds, its amount and locations can be assumed from the tetravalency of carbon, and need not be seedled in most cases.

The IUPAC nomenclature system is a set of logical rules devised and used by organic chemists to circumvent problems caused by arbitrary nomenclature. Knowing these rules and given a structural formula, one should be able to write a unique name very distinct compound. Except the control of t

- · A root or base indicating a major chain or ring of carbon atoms found in the molecular structure.
- . A suffix or other element(s) designating functional groups that may be present in the compound.
- Names of substituent groups, other than hydrogen, that complete the molecular structure.

As an introduction to the IUPAC nomenciature system, we shall first consider compounds that have no specific functional groups. Such compounds are composed only of carbon and hydrogen atoms bonded together by sigma bonds (all carbons are sp³ hybridized).

An excellent presentation of organic nomenclature is provided on a <u>Nomenclature Page</u>, created by Dave Woodcock. A hill presentation of the IUPAC Rules is also available.

Alkanes

Lagraniani,

Alkanes

Hydrocathors having no double or fulls bond functional groups are classified as alkanes or cyclosikanes, depending on whether the carbon fathers of the molecule are arranged only in chains or also in rings. Allhough hese hydrocathors have no functional groups, they constitute the fatherwork on which functional groups are bosted in other classes of compounds, and provide an ideal starting point for studying and naming organic compounds. The álkines and cyclosikanes are also members of a larger class of compounds referred to as allphatic. Simply put, allphatic compounds are compounds that do not horopromet any grounds infers in their medicular structure.

The following table lists the IUPAC names assigned to aimple continuous-chain alkanes from C-1 to C-10. A common "ane" stuff identifies these compounds as alkanes. Longer chain alkanes are well known, and their mease may be tough many reference and text books. The names methane through decane should be memorized, since they constitute the root of many IUPAC names. Fortunately, common numerical profites are used in numing chains of two or more carbon alters.

Name	Molecular Formula	Structural Formula	Isomers	Name	Molecular Formula	Structural Formula	Isomers
methane	CH4	CH4	1	hexane	C ₆ H ₁₄	CH ₃ (CH ₂) ₄ CH ₃	5
ethane	C ₂ H ₆	CH ₃ CH ₃	1	heptane	C ₇ H ₁₆	CH ₃ (CH ₂) ₅ CH ₃	9
propane	C ₃ H _a	CH ₃ CH ₂ CH ₃	1	octane	C ₈ H ₁₈	CH ₃ (CH ₂) ₆ CH ₃	18
butane	C ₄ H ₁₀	CH3CH2CH2CH3	2	nonane	C ₉ H ₂₀	CH ₃ (CH ₂) ₇ CH ₃	35
pentane	C ₅ H ₁₂	CH2(CH2)2CH2	3	decane	C ₁₀ H ₂₂	CH ₃ (CH ₂) ₆ CH ₃	75

Some important behavior trends and terminologies:

- (i) The formulas and structures of these alkanes increase uniformally by a CH, increment.
- (ii) A uniform variation of this kind in a series of compounds is called homologous.
- (iii) These formulas all fit the C_nH_{2n+2} rule. This is also the highest possible H/C ratio for a stable hydrocarbon.
- (Iv) Since the H/C ratio in these compounds is at a maximum, we call them saturated (with hydrogen).